Massachusetts Community and State College Recycling: Massachusetts Bay Community College

FINAL REPORT
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Massachusetts Bay Community College Summary (Table 4)

Recommended improvements at MBCC also focus on fibers and beverage containers. For fibers, two options are available. One option would see mixed paper recycled in breakaway compactor while cardboard is baled. Under the second options, mixed paper and cardboard would be combined and recycled in a breakaway compactor. Projected savings are slightly higher with the compactor/baler option, which also preserves flexibility to market mixed paper and cardboard separately. But using a single compactor for the combined fiber stream would be simpler for MBCC staff.

The most cost effective option to recycle beverage and food containers would be collection and transport in wheeled recycling containers to the nearby Wellesley municipal transfer station. Other local institutions are doing this already. Other than transport (presumably in an MBCC vehicle), there would be no cost to process and recycle MBCC's containers. We estimate that twelve containers with a total acquisition cost of $1,200 would be sufficient for this program. In addition, we recommend purchase of 50 "slim jim" recycling containers at a cost of $2,500 to improve on-campus capture of mixed paper.

Combined, we believe that implementation of aggressive fiber recovery plus food/beverage container recovery will allow MBCC to achieve a recycling rate of 30% or more, compared to a currently estimated 5%.

Massachusetts Bay Community College

Recycling Status, Issues, and Opportunities
Massachusetts Bay Community College

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Current Status

Mass. Bay Community College (MBCC) runs against the grain of many collegiate recycling programs. The school has strong programs for many of what are often considered "oddball" materials – scrap metal, wood waste, computers, universal wastes, mixed C&D debris. The school is much weaker in its programs for a number of "core" recyclables, including fibers and containers.

MBCC does manage a recycling program for mixed paper, but it is weak in two areas: 1) Capture rates are low (less than 10%), largely because of inefficient collection; and 2) Costs are high, largely because the college relies on toter service in an area that is remote from paper markets. MBCC also receives indifferent service from its current mixed paper service provider.

MBCC has attempted to recycle cardboard in the past, but high costs compounded by contamination issues influenced the school to shut the program down. Inattentive service was a factor in this decision as well.

MBCC has also attempted to recycle food and beverage containers, through a community service connection with local Boy Scouts. Like many programs that rely on a similar connection to a nonprofit with changing personnel, this folded with the departure of key Boy Scout supporters, and has not been reinitiated.

Issues / Opportunities

Many schools have successfully considered and addressed the same issues that face MBCC in its fiber and container recycling. If MBCC can adapt these successful programs to its own situation – as it should be able to – we believe that mixed paper, cardboard, and containers can all be added as cost-effective

- ***Mixed Paper***: Containers should be added, and placement should be optimized, to enhance visibility and capture rates for mixed paper. Slot-tops should be used in most locations to reinforce the recycling message and reduce contamination.

  Hauler pickup in toters is costly and inefficient. Evaluate costs and benefits of self-processing in a self-contained or breakaway compactor.

- ***Cardboard***: Should be self-processed with a baler or compactor. A baler may be the more cost effective, if MBCC can store to trailer-load volumes, or if milk-run pickup of less-than-trailer-load volumes can be arranged.

- ***Containers***: Although not, by weight, a major component of the waste stream, containers are one of the most visible wastes on campus, and container recycling is typically viewed by students and staff as a core element of a campus recycling program. MBCC has the opportunity to recycle through Wellesley's municipal program. The only cost to do so is the cost to transport containers to the Wellesley recycling center, and MBCC may be able to partner with Babson College for this service. Containers should be collected in plastic bags in toters with can-only tops, or a similar recycling container.

Impacts

We estimate that recycling currently captures less than 5% of MBCC's waste stream (the school does not collect information that allows calculation of an accurate recycling rate). Recommended enhancements could add to this rate as follows:

Mixed Paper	15-20% of the waste stream
Cardboard	5% of the waste stream
Containers	5% of the waste stream

Aggressively implemented, recycling of these materials could capture an additional 30% of MBCC's wastes, bringing the school's recycling rate to 35+ percent.

Massachusetts Bay Community College
Massachusetts Community/State College Recycling: Current Practices and Potential Modifications

Institution: Mass. Bay Comm. College — Site Visit Date: 6/12/03
Contact: Bob Irvine / Bryant Fay — Phone: 781-239-2561 — Email: r.Irvine@massbay.edu

Material	Current Practice	Comments/Notes	Recommended Modifications
Mixed Office Paper (unshredded)	Facilities staff collects in 96 gal carts. Carts rolled to basement area where they are picked up (swapped for empties) by BFI (campus waste hauler).	Inefficient and low capture rate (estimate <10% of paper is recycled). Container number, placement, and visibility are poor	• Increase number of containers. • Evaluate container placement to assure sufficient placement in high-use, high-visibility areas. • Use slot-tops as appropriate to reinforce recycling emphasis and discourage contamination. • Evaluate cost-benefit of compactor.
Newspaper/Magazine Mix	Collected with mixed office paper	See above.	See above. Additional containers in locations with high-generation.
Confidential Documents	Shredded by individual departments. Some is recycled with mixed paper; some is discarded.		Assure access to recycling containers in locations where documents are shredded.
Cardboard	Not recycled. Discarded with regular trash.	Attempted to recycle (loose in dumpster), but expensive, and contamination resulted in significant additional charges.	Evaluate cost/benefit of self-processing (baler or breakaway compactor). Baler probably most cost effective, if milk run pickup of less-than-truckload quantities can be arranged.
Containers (beverage and tin cans)	Not recycled.	Once had connection with Boy Scouts who collected for redemption and metal value, but no longer.	Collect (bags in toters) and recycle through Wellesley transfer station. No cost to recycle, but MBCC would need to transport. Consider possible relationship with Babson, which has recycling vehicle and makes regular runs to Wellesley xfer stn.
Scrap Metal	Recycled through IRN. Regular 2x per year purge. IRN drops off container, container is filled, IRN removes container.		
Wood Waste	Recycled (as mixed debris) through IRN.		

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Material	Current Practice	Comments/Notes	Recommended Modifications
Computers/Electronic Equipment	Recycled through IRN.		Milk run collection several times a year to minimize storage requirement on campus.
Fluorescent Lamps & Ballasts (Universal wastes)	Recycled through Triumvirate. Facilities collects and stores in a secure location; calls Triumvirate for pickup when storage is full		Consider single-source vendor that can pick up universals, batteries, and electronics together (eliminating separate collection charges).
Batteries	Not recycled.		Recycle with universals.
Surplus Property	Collected to central area and held. Some is posted to state surplus system. Much is simply held and then ultimately discarded.	Big problem. Lots of stuff with nowhere to go. Two-campus volume (Framingham and Wellesley) comes through Wellesley.	Need faster and more efficient triage and purge. Items still on asset inventory need to go through state system. Otherwise find donation or resale option, or else recycle immediately as metal (see Scrap Metal) or wood (see Wood Waste)
Construction/Demolition	Several containers of mixed debris are recycled annually through IRN (majority is wood furniture and packaging, not C&D), as are ~2 containers/yr of metal.	No program specifically for C&D. No recent construction projects, so C&D volumes have been small.	Evaluate/implement comprehensive C&D recycling for all new construction or renovation.

Massachusetts Bay Community College
Cost of Recommended Recycling Program Enhancements

Fibers

Recommendation, Option1: Compact mixed paper in a breakaway compactor. Haul and return to North Shore Recycled Fibers (Haverhill or Fitchburg Mill). Bale cardboard and market (North Shore or other).

Estimated Cost of Mixed Paper and Cardboard Recycling Program, Mass Bay CC		
Item	**Units**	**Value**
Estimated Generation, Mixed Paper	Tons/Yr	53
Estimated Generation, Cardboard	Tons/Yr	80
Estimated Capture, Mixed Paper, at 80% Recycling Rate	Tons/Yr	42.4
Estimated Capture, Cardboard, at 80% Recycling Rate	Tons/Yr	64
Revenue, Mixed Paper	$$/Ton	$25
Revenue, Cardboard	$$/Ton	$40
MIXED PAPER		
Breakaway Compactor w/ Toter Dumper		
Purchase	$$	$13,845
4-Year Lease-to-Own	$$/Yr	$4,217
Rental, Breakaway Compactor Box	$$/Yr	$1,440
Haul, Breakaway Compactor Box to North Shore	$$/Haul	$170
Tons Per Haul to North Shore Fitchburg, Mixed Paper	Tons/Haul	7.0
Hauls to North Shore Per Year	Hauls/Yr	6.1
Total Annual Cost of Hauls to North Shore	$$/Yr	$1,030
Total Revenues, Marketing of Mixed Paper	$$/Yr	$1,060
CARDBOARD		
Baler		
Purchase	$$	$9,350
4-Year Lease-to-Own	$$/Yr	$2,845
Haul, 6 Bales (@ 1,000 lbs/bale) to Market	$$/Haul	$125
Tons Per Haul to Market (6 bales @ 1,000 lbs/bale)	Tons/Haul	3.0
Number of Hauls to Market	Hauls/Yr	21.3
Total Annual Cost of Hauls to Market	$$/Yr	$2,667
Total Revenues, Marketing of Cardboard	$$/Yr	$2,560
Avoided Disposal Cost (Haul + Tip), Mixed Paper + Cardboard	$$/Ton	$125
Avoided Disposal Cost, Total, Mixed Paper + Cardboard	$$/Yr	$13,300
Annual Recycling Cost(Revenue) with Baler and Compactor Purchase	**$$/Year**	**$1,516**
Annual Recycling Cost(Revenue) with 4-Year Lease-to-Own	**$$/Year**	**$8,578**
Net Annual Cost(Savings) after Avoided Disposal Cost, Purchase	**$$/Year**	**($11,784)**
Net Annual Cost(Savings) after Avoided Disposal Cost, 4-Yr LTO	**$$/Year**	**($4,722)**

Recommendation, Option2: Compact mixed paper plus cardboard in a breakaway compactor. Haul and return to North Shore Recycled Fibers (Haverhill or Fitchburg Mill).

Estimated Cost of Mixed Paper and Cardboard Recycling Program, Mass Bay CC		
Item	**Units**	**Value**
Estimated Generation, Mixed Paper Plus Cardboard	Tons/Yr	133
Estimate Capture, MP + Cardboard, at 80% Recycling Rate	Tons/Yr	106.4
Revenue, Mixed Paper Plus Cardboard	$$/Ton	$25
Breakaway Compactor w/ Toter Dumper		
Purchase	$$	$13,845
4-Year Lease-to-Own	$$/Yr	$4,217
Rental, Breakaway Compactor Box	$$/Yr	$1,440
Haul, Breakaway Compactor Box to North Shore	$$/Haul	$170
Tons Per Haul to North Shore Fitchburg, Mixed Paper	Tons/Haul	5.0
Hauls to North Shore Per Year	Hauls/Yr	21.3
Total Annual Cost of Hauls to North Shore	$$/Yr	$3,618
Total Revenues, Marketing of Mixed Paper	$$/Yr	$2,660
Avoided Disposal Cost (Haul + Tip), Mixed Paper + Cardboard	$$/Ton	$125
Avoided Disposal Cost, Total, Mixed Paper + Cardboard	$$/Yr	$13,300
Annual Recycling Cost(Revenue) with Compactor Purchase	**$$/Year**	**$2,398**
Annual Recycling Cost(Revenue) with 4-Year Lease-to-Own	**$$/Year**	**$6,615**
Net Annual Cost(Savings) after Avoided Disposal Cost, Purchase	**$$/Year**	**($10,902)**
Net Annual Cost(Savings) after Avoided Disposal Cost, 4-Yr LTO	**$$/Year**	**($6,685)**

Recommendation: Purchase of additional recycling containers

Estimated Cost of Container Purchase, Mixed Paper Recycling			
Item	**Number**	**Unit Cost**	**Total Cost**
Two-wheeled recycling containers (Schaefer or equivalent) with paper slot tops	12	$100	$1,200
Slim Jim containers (or equivalent) with paper slot tops	50	$50	$2,500
Total for Recommended Recycling Containers			**$3,700**